In the Claims:

From the previous amendment, amend claim 11 and add new claims 44 - 63 so that the amended claim set reads as follows:

1. (previously amended) A method for determining the response of a gas-in-liquid concentration measurement device when measuring a concentration of a gas in a liquid when the gas is at a concentration in the liquid above the solubility threshold, the method comprising:

obtaining the solubility threshold for the gas in the liquid;

ensuring that the device is calibrated for concentrations of about 0% of the gas in the liquid and about 100% of the gas;

using the device to conduct sufficient measurements of the gas concentration at known actual concentrations to permit generation of a first mathematical function representing device-measured concentrations versus actual concentrations of the gas in the liquid below the solubility threshold of the gas in the liquid;

applying the first mathematical function to deduce a theoretical device-response at about the solubility threshold; and

using the theoretical device-response at about the solubility threshold and the device calibrated response at 100% gas concentration to determine a second mathematical function representative of the response of the gas-in-liquid concentration measurement device when the concentration of gas is above the solubility threshold, the second mathematical function defining the device-measured concentration versus actual concentration for the region above the solubility threshold wherein the actual concentration includes the amount of gas that is solubilized in the liquid and the gas that is present in bubble state.

2. (previously amended) The method of claim 1 wherein sufficient measurements is one measurement between 0% concentration of the gas in the liquid and the concentration of the gas in the liquid at the solubility threshold.

3. (original) The method of claim 1 wherein sufficient measurements is at least two measurements.

4. (previously amended) The method of claim 1 wherein the known actual gas concentrations are less than about half of the gas concentration at the solubility threshold.

5. (previously amended) The method of claim 1 wherein the first mathematical function and the second mathematical function are each linear.

6. (previously amended) The method of claim 1 further comprising generating a correction factor for use with the measurement device, the correction factor being the difference between a value of the first mathematical function or the second mathematical function and an actual gas concentration corresponding to that value and the difference is recorded and applied to any device-measured concentrations corresponding to the value.

7. (previously amended) The method of claim 1 further comprising generating a correction factor for use with the measurement device, the correction factor being generated as the inverse functions of the first mathematical function and the second mathematical function.

8. (previously amended) A method for determining the response of a gas-in-liquid concentration measurement device when measuring a concentration of a gas in a liquid when the gas is at a concentration in the liquid above the solubility threshold, the method comprising:

obtaining the solubility threshold for the gas in the liquid;

ensuring that the device is calibrated for concentrations of about 0% of the gas in the liquid and about 100% of the gas;

using the device to conduct sufficient measurements of the gas concentration at known actual concentrations to permit generation of a first mathematical function representing

device-measured concentration versus actual concentration of the gas in the liquid below the solubility threshold of the gas in the liquid;

determining a measured concentration at about the solubility threshold; and

using the measured concentration at about the solubility threshold and the device calibrated response at 100% gas concentration to determine a second mathematical function representative of the response of the gas-in-liquid concentration measurement device when the gas is in a bubble state in the liquid, the second mathematical function defining device-measured concentration versus actual concentration above the solubility threshold.

11 ~~9.~~ (original) The method of claim 10 ~~8~~ wherein the measured concentration at about the solubility threshold is measured using the device.

12 ~~10.~~ (previously amended) The method of claim 10 ~~8~~ wherein the measured concentration at about the solubility threshold is determined by extrapolation of the first mathematical function.

19 ~~11.~~ (currently amended) A method for [preparing] using a concentration determining device [for use] to measure the concentration of a selected gas in a selected liquid, comprising:

obtaining a correction factor for measuring the concentration of the selected gas in the selected liquid using the device by obtaining the solubility threshold for the selected gas in the selected liquid; ensuring that the device is calibrated for concentrations of about 0% selected gas in selected liquid and about 100% selected gas; using the device to conduct sufficient measurements of the gas concentration at known actual concentrations of the selected gas in the selected liquid to permit generation of a first mathematical function representing device-measured concentration versus actual concentration of the selected gas in the selected liquid below the solubility threshold; determining a measured concentration at about the solubility threshold; using the measured concentration at about the solubility threshold and the device calibrated

response at 100% gas concentration to determine a second mathematical function representative of device-measured concentration versus actual concentration above the solubility threshold, wherein the actual concentration of the selected gas in the selected liquid includes an amount of solubilized gas and an amount of the gas in bubble state; and using the first mathematical function and the second mathematical function to generate the correction factor, the correction factor being one of (i) the difference between a value of the first mathematical function or the second mathematical function and an actual gas concentration corresponding to that value or (ii) the inverse functions of the first mathematical function and the second mathematical function; and

recording the correction factor for application to any device-measured results by the device.

20 ~~12.~~ (original) The method as defined in claim ~~11~~ 19 wherein the correction factor is plotted for the selected gas in the selected liquid.

21 ~~13.~~ (original) The method as defined in claim ~~11~~ 19 wherein the correction factor is included in a system for operating the device.

30 ~~14.~~ (previously amended) A method for determining a concentration of a selected gas in a selected liquid, the method comprising:

providing a device for determining gas-in-liquid concentrations;

using the device to obtain a concentration measurement of the selected gas in the selected liquid; and

applying a correction factor to the concentration measurement to produce an output concentration measurement of the selected gas in the selected liquid, the correction factor being obtained by using a device similar to the device for determining gas-in-liquid concentrations and obtaining the solubility threshold for the selected gas in the selected liquid; ensuring that the similar device is calibrated for concentrations of about 0% selected gas in selected liquid and about 100% selected gas; using the similar

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device to conduct sufficient measurements of the selected gas concentration at known actual concentrations to permit generation of a first mathematical function representing measured concentration versus actual concentration below the solubility threshold of the selected gas in the selected liquid; determining a measured concentration at about the solubility threshold; using the measured concentration at about the solubility threshold and the device calibrated response at about 100% selected gas concentration to determine a second mathematical function representative of measured concentration versus actual concentration above the solubility threshold, wherein the actual concentration of the selected gas in the selected liquid includes an amount of solubilized gas and an amount of the gas in bubble state; and using the first mathematical function and the second mathematical function to generate the correction factor, the correction factor being one of (i) the difference between a value of the first mathematical function or the second mathematical function and an actual gas concentration corresponding to that value or (ii) the inverse functions of the first mathematical function and the second mathematical function.

~~15.~~ (original) A method according to claim ~~14~~ wherein the device is a gas membrane device.

16 to 19. (cancelled due to restriction)

~~20.~~ (previously added) The method according to claim 1 wherein the device is a gas semipermeable membrane device.

~~21.~~ (previously added) The method of claim ~~8~~ wherein sufficient measurements is one measurement between 0% concentration of the gas in the liquid and the concentration of the gas in the liquid at the solubility threshold.

~~22.~~ (previously added) The method of claim ~~8~~ wherein sufficient measurements is at least two measurements.

~~23.~~ (previously added) The method of claim ~~8~~ wherein the known actual gas concentrations are less than about half of the gas concentration at the solubility threshold.

16 24. (previously added) The method of claim 8 10 wherein the first mathematical function and the second mathematical function are each linear.

17 25. (previously added) The method according to claim 8 10 wherein the device is a gas semipermeable membrane device.

22 26. (previously added) The method of claim 11 19 wherein sufficient measurements is one measurement between 0% concentration of the selected gas in the selected liquid and the concentration of the selected gas in the selected liquid at the solubility threshold.

23 27. (previously added) The method of claim 11 19 wherein sufficient measurements is at least two measurements.

24 28. (previously added) The method of claim 11 19 wherein the known actual concentrations are less than about half of the gas concentration at the solubility threshold.

25 29. (previously added) The method of claim 11 19 wherein the first mathematical function and the second mathematical function are each linear.

26 30. (previously added) The method of claim 11 19 wherein the measured concentration at about the solubility threshold is determined by extrapolation of the first mathematical function.

27 31. (previously added) The method of claim 11 19 wherein the measured concentration at about the solubility threshold is obtained using the device.

28 32. (previously added) The method according to claim 11 19 wherein the concentration determining device is a gas membrane device.

32 33. (previously added) The method of claim 14 30 wherein sufficient measurements is one measurement between 0% concentration of the selected gas in the selected liquid and the concentration of the selected gas in the selected liquid at the solubility threshold.

34. (previously added) The method of claim 14 wherein sufficient measurements is at least two measurements.

35. (previously added) The method of claim 14 wherein the known actual concentrations are less than about half of the gas concentration at the solubility threshold.

36. (previously added) The method of claim 14 wherein the first mathematical function and the second mathematical function are each linear.

37. (previously added) The method of claim 14 wherein the measured concentration at about the solubility threshold is determined by extrapolation of the first mathematical function.

38. (previously added) The method of claim 14 wherein the measured concentration at about the solubility threshold is obtained using the similar device.

39. (previously added) The method of claim 14 wherein the similar device is the device provided and used to obtain the concentration measurement.

40. (previously added) The method of claim 1 wherein the step of obtaining the solubility threshold is performed at any time prior to the step of applying the first mathematical function.

41. (previously added) The method of claim 8 wherein the step of obtaining the solubility threshold is performed at any time prior to a step wherein the solubility threshold must be known.

42. (previously added) The method of claim 11 wherein the step of obtaining the solubility threshold is performed at any time prior to a step wherein the solubility threshold must be known.

43. (previously added) The method of claim 14 wherein the step of obtaining the solubility threshold is performed at any time prior to a step wherein the solubility threshold must be known.

40 ~~44.~~ (new) A method for obtaining a correction factor for measuring a concentration of a gas in a liquid using a gas-in-liquid concentration measurement device, the method comprising:

obtaining the solubility threshold for the gas in the liquid;

ensuring that the device is calibrated for concentrations of about 0% of the gas in the liquid and about 100% of the gas;

using the device to conduct sufficient measurements of the gas concentration at known actual concentrations to permit generation of a first mathematical function representing device-measured concentrations versus actual concentrations of the gas in the liquid below the solubility threshold of the gas in the liquid;

using the device-measured concentrations and the solubility threshold to fully define the first function and deducing a theoretical device-response at about the solubility threshold; and

using the theoretical device-response at about the solubility threshold and the device calibrated response at 100% gas concentration to determine a second mathematical function representative of the device-measured concentration versus actual concentration for the region above the solubility threshold wherein the actual concentration includes an amount of gas that is solubilized in the liquid and an amount of gas that is present in bubble state; and

using the first mathematical function and the second mathematical function to generate the correction factor.

41 ~~45.~~ (new) The method of claim 40 ~~44~~ wherein sufficient measurements is one measurement between 0% concentration of the gas in the liquid and the concentration of the gas in the liquid at the solubility threshold.

42 ~~46.~~ (new) The method of claim 40 ~~44~~ wherein sufficient measurements is at least two measurements.

43 47. (new) The method of claim 44 40 wherein the known actual gas concentrations are less than about half of the gas concentration at the solubility threshold.

44 48. (new) The method of claim 44 40 wherein the first mathematical function and the second mathematical function are each linear.

45 49. (new) The method of claim 44 40 wherein the step of obtaining the solubility threshold is performed at any time prior to the step of applying the first mathematical function.

46 50. (new) The method of claim 44 40 wherein the correction factor is the difference between a value of the first mathematical function or the second mathematical function and an actual gas concentration corresponding to that value and the difference is recorded and applied to any measured concentrations corresponding to the value.

A 47 51. (new) The method of claim 44 40 wherein the correction factor is generated as the inverse function of at least one of the first mathematical function and the second mathematical function.

48 52. (new) The method according to claim 44 40 wherein the device is a gas semipermeable membrane device.

49 53. (new) A method for obtaining a correction factor for measuring a concentration of a gas in a liquid using a gas-in-liquid concentration measurement device, the method comprising:

obtaining the solubility threshold for the gas in the liquid;

ensuring that the device is calibrated for concentrations of about 0% of the gas in the liquid and about 100% of the gas;

using the device to conduct sufficient measurements of the gas concentration at known actual concentrations to permit generation of a first mathematical function representing device-measured concentration versus actual concentration of the gas in the liquid below the solubility threshold of the gas in the liquid;

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determining a measured concentration at about the solubility threshold; and

using the measured concentration at about the solubility threshold and the device calibrated response at 100% gas concentration to determine a second mathematical function representative of the device-measured concentration versus actual concentration above the solubility threshold; and

using the first mathematical function and the second mathematical function to generate the correction factor.

54. (new) The method of claim 53 wherein the correction factor is the difference between a value of the first mathematical function or the second mathematical function and an actual gas concentration corresponding to that value and the difference is recorded and applied to any measured concentrations corresponding to the value.

55. (new) The method of claim 53 wherein the correction factor is generated as the inverse function of at least one of the first mathematical function and the second mathematical function.

56. (new) The method of claim 53 wherein the measured concentration at about the solubility threshold is determined by extrapolation of the first mathematical function.

57. (new) The method of claim 53 wherein the measured concentration at about the solubility threshold is measured using the device.

58. (new) The method of claim 53 wherein sufficient measurements is one measurement between 0% concentration of the gas in the liquid and the concentration of the gas in the liquid at the solubility threshold.

59. (new) The method of claim 53 wherein sufficient measurements is at least two measurements.

60. (new) The method of claim 53 wherein the known actual gas concentrations are less than about half of the gas concentration at the solubility threshold.

61. (new) The method of claim 53 wherein the first mathematical function and the second mathematical function are each linear.

62. (new) The method according to claim 53 wherein the device is a gas semipermeable membrane device.

63. (new) The method of claim 53 wherein the step of obtaining the solubility threshold is performed at any time prior to a step wherein the solubility threshold must be known.